

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

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Examiner: Unknown

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(U.S. National Phase of PCT/EP2004/006010)

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For: ALKOXYSILANE-TERMINATED PREPOLYMERS

Attorney Docket No.: WAS0749PUSA

PRELIMINARY AMENDMENT UNDER 37 C.F.R. § 1.115

MAIL STOP PCT
Commissioner for Patents
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Following the filing of the application filed herewith but prior to calculation of the filing fee, kindly amend the application as follows.

Amendments to the Specification:

On page 1, after the title, insert the following new paragraph:

CROSS-REFERENCE TO RELATED APPLICATION

This application is the U.S. national phase of PCT Appln. No. PCT/EP2004/006010 filed June 3, 2004, which claims priority to German application 103 28 844.9 filed June 26, 2003.

At page 1, line 2, please add the following heading and subheading as shown below:

BACKGROUND OF THE INVENTION**1. Field of the Invention**

Please insert the following subheading on page 1, prior to the second full paragraph, as shown below:

2. Description of the Related Art

Please amend the paragraph beginning on page 2, at line 11 as shown below:

In one particularly advantageous preparation process alkoxysilane-terminated prepolymers are reacted by reaction of polyols[[,]] such as [[of]] polyester or polyether polyols, with a γ -isocyanatopropylalkoxysilane. As an alternative it is also possible here to react OH-terminated prepolymers[[,]] prepared from a polyol and a substoichiometric amount of a di- or polyisocyanate, with a γ -isocyanatopropylalkoxysilane, to give alkoxysilane-terminated prepolymers. Systems of this kind are described for example in EP 0 931 800, EP 0 070 475 or US 5,068,304.

Please amend the paragraph beginning on page 2, at line 34 as shown below:

In DE 198 49 817, moreover, it is observed that for the preparation of the isocyanate-terminated prepolymers employed therein as ~~intermediate~~ intermediates, it is also possible, if desired, to ~~use, in addition,~~ add minor amounts of dihydric and trihydric alcohols of low molecular weight. However, these minor amounts of an alcohol do not result in any improvements at all in the properties of the resulting prepolymers or their curing products.

Please insert the following subheading on page 5, prior to the paragraph beginning on line 31 as shown below:

SUMMARY OF THE INVENTION

Please amend the paragraph beginning on page 5, at line 31 as shown below:

~~The~~ An object of the invention was to provide materials based on silane-terminated prepolymers ~~and exhibiting~~ which exhibit improved tensile strength and breaking elongation, but are devoid of the aforementioned disadvantages. These and other objects are achieved through the use of alkoxy-silyl-terminated prepolymers prepared by reacting an alkoxysilane with a prepolymer prepared by reacting a di- or polyisocyanate with both a low molecular weight diol or polyol and a high molecular weight polyol, the respective polyol components present within a specific ratio range, and giving rise to an increased content of urethane groups, and an inhomogenous distribution thereof.

Please insert the following subheading on page 5, prior to the last paragraph beginning on line 36 as shown below:

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Please amend the paragraph beginning on page 5, at line 36 as shown below:

The invention provides prepolymers (A) having end groups of the general formula [1]



where

R¹ is an optionally halogen-substituted alkyl, cycloalkyl, alkenyl or aryl radical having 1-10 carbon atoms,

R² is an alkyl radical having 1-6 carbon atoms or an ω-oxaalkyl-alkyl radical having in all 2-10 carbon atoms, and

a is a number from 0 to 2,

the prepolymers (A) being obtainable by reacting

- 1) polyol (A1) having an average molecular weight Mn of 1000 to ~~25,000~~ 25,000,
 - 2) low molecular weight alcohol (A2) having at least two hydroxyl groups per molecule and a molecular weight of 62 to 300,
 - 3) di- or polyisocyanate (A3), and
 - 4) alkoxysilane (A4) possessing an isocyanate group or an isocyanate-reactive group,
- the low molecular weight alcohol (A2) and the polyol (A1) being used in a molar ratio of 0.3:1 to 7:1.

Please amend the paragraph beginning on page 8, at line 31 as shown below:

A feature of the polymers (A) having end groups of the general formula [2] is that they contain alkoxysilyl groups separated only by a ~~methyl~~ methylene spacer from an electronegative heteroatom having at least one free electron pair. As a result, these polymers possess an extremely high reactivity toward (atmospheric) humidity, and can therefore be processed to polymer blends (M) which, even with little or even no tin catalyst, preferably with no tin or titanium catalyst, more preferably entirely without heavy metal catalyst, cure at room temperature with sufficiently short tack-free times and at a sufficiently high rate.

Please amend the paragraph beginning on page 9, at line 12 as shown below:

Particular preference is given to alkoxysilyl-terminated polymers (A) whose crosslinkable alkoxysilyl groups are separated by a methyl spacer from a linking group such as urethane or urea ~~groups group~~, i.e., polymers (A) of the general formula [2] in which A is selected from the groups $-\text{O}-\text{CO}-\text{N}(\text{R}^3)-$, $-\text{N}(\text{R}^3)-\text{CO}-\text{O}-$, $-\text{N}(\text{R}^4)-\text{CO}-\text{NH}-$, and $-\text{NH}-\text{CO}-\text{N}(\text{R}^4)-$.

Please amend the paragraph beginning on page 10, at line 12 as shown below:

As polyols (A1) for the preparation of the prepolymers (A) it is possible in principle to use all polyols having an average molecular weight M_n of 1000 to ~~25-000~~ 25,000. These may be, for example, hydroxyl-functional polyethers, polyesters, polyacrylates and polymethacrylates, polycarbonates, polystyrenes, polysiloxanes, polyamides, polyvinyl esters, polyvinyl hydroxides or polyolefins such as polyethylene, polybutadiene, ethylene-olefin copolymers or styrene-butadiene copolymers, for example.

Please amend the paragraph beginning on page 10, at line 23 as shown below:

Preference is given to using polyols (A1) having a molecular weight M_n of 2000 to ~~25-000~~ 25,000, more preferably of 4000 to ~~20-000~~ 20,000. Particularly suitable polyols (A1) are aromatic and/or aliphatic polyester polyols and polyether polyols, of the kind widely described in the literature. The polyethers and/or polyesters that are used as polyols (A1) may be either linear or branched, although preference is given to unbranched, linear polyols. Moreover, polyols (A1) may also possess substituents such as halogen atoms.

Please amend the paragraph beginning on page 23, at line 36 as shown below:

The prepolymer described above is admixed with carbamatomethyltrimethoxysilane (C-TMO – prepared according to Example 3) and the components are mixed in a Speedmixer (DAC 150 FV from Hausschild) at ~~27-000~~ 27,000 rpm for 15 seconds. Then chalk (BLR 3 from Omya), HDK V 15 (Wacker Chemie GmbH, Germany) and

methoxymethyltrimethoxysilane (MeO-TMO – prepared according to Example 2) are added and mixing is carried out for twice 20 seconds at a speed of ~~30-000~~ 30,000 rpm. Finally aminopropyltrimethoxysilane (A-TMO – Silquest A1110® from Crompton) is added, followed again by mixing for 20 seconds at a speed of ~~30-000~~ 30,000 rpm.

Please amend the paragraph beginning on page 25, at line 19 as shown below:

The prepolymer described above is admixed with carbamatomethyltrimethoxysilane (C-TMO – prepared according to Example 3) and the components are mixed in a Speedmixer (DAC 150 FV from Hausschild) at ~~27-000~~ 27,000 rpm for 15 seconds. Then chalk (BLR 3 from Omya), HDK V 15 (Wacker Chemie GmbH, Germany) and methoxymethyltrimethoxysilane (MeO-TMO – prepared according to Example 2) are added and mixing is carried out for twice 20 seconds at a speed of ~~30-000~~ 30,000 rpm. Finally aminopropyltrimethoxysilane (A-TMO – Silquest A1110® from Crompton) is added, followed again by mixing for 20 seconds at a speed of ~~30-000~~ 30,000 rpm.

Please amend the paragraph beginning on page 27, at line 6 as shown below:

The prepolymer described above is admixed with carbamatomethyltrimethoxysilane (C-TMO – prepared according to Example 3) and the components are mixed in a Speedmixer (DAC 150 FV from Hausschild) at ~~27-000~~ 27,000 rpm for 15 seconds. Then chalk (BLR 3 from Omya), HDK V 15 (Wacker Chemie GmbH, Germany) and methoxymethyltrimethoxysilane (MeO-TMO – prepared according to Example 2) are added and mixing is carried out for twice 20 seconds at a speed of ~~30-000~~ 30,000 rpm. Finally aminopropyltrimethoxysilane (A-TMO – Silquest A1110® from Crompton) is added, followed again by mixing for 20 seconds at a speed of ~~30-000~~ 30,000 rpm.

Please amend the paragraph beginning on page 33, at line 20 as shown below:

Preparation of a blend with prepolymer (A):

This prepolymer is admixed with 5% by weight of t-butylmethylether (Triveron®) and processed as in Example 4 to a prepolymer blend. The formula used is that depicted in Table 10.